

| | | | | |
|--------------------------|-----------|------|---------|--|
| Total Kjeldahl Nitrogen | mg/L | Grab | 1/month | |
| Fecal Coliform Organisms | MPN/100mL | Grab | 1/month | |
| Boron | mg/L | Grab | 1/month | |
| Chloride | mg/L | Grab | 1/month | |
| Dissolved Iron | mg/L | Grab | 1/month | |
| Dissolved Manganese | mg/L | Grab | 1/month | |
| Sodium | mg/L | Grab | 1/month | |

1. Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the Regional Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Regional Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986.
5. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
 - d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.
6. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
- a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
 - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

B. Self Monitoring Reports (SMRs)

- 1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
- 2. Monitoring results shall be submitted to the Regional Water Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, and year**, respectively.

3. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance.
4. With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.
5. If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.
6. A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions.
7. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670-6114

8. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-11. Monitoring Periods and Reporting Schedule

| Sampling Frequency | Monitoring Period Begins On... | Monitoring Period | SMR Due Date |
|---------------------------|---|---|---|
| Continuous | First day of calendar month following effective date of this Order | All | Submit with monthly SMR |
| 1/day | First day of calendar month following effective date of this Order | (Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling. | Submit with monthly SMR |
| 1/week | First Sunday following first day of calendar month following permit effective date | Sunday through Saturday | Submit with monthly SMR |
| 1/month | First day of calendar month following permit effective date | First day of calendar month through last day of calendar month | First day of second calendar month following month of sampling |
| 1/quarter | Closest of 1 January, 1 April, 1 July, or 1 October following permit effective date | 1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December | May 1 of the same year August 1 of the same year November 1 of the same year February 1 of the next year |
| 2/year | Closest of 1 January or 1 July following permit effective date | 1 January through 30 June 1 July through 31 December | August 1 of the same year February 1 of the next year |
| 1/year | 1 January following permit effective date | 1 January through 31 December | February 1 of the next year |

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.
2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

| Standard Mail | FedEx/UPS/ Other Private Carriers |
|--|--|
| State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000 | State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814 |

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated cannot be accepted unless they follow the exact same format as EPA form 3320-1.

D. Other Reports

1. **Progress Reports.** As specified in Special Provisions VI.C.3.b, progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status in the reduction of salinity, whether the Discharger is on task to meet the salinity goal, and the remaining tasks to meet the salinity goal.

Table E-12. Reporting Requirements for Special Provisions Progress Reports

| Special Provision | Reporting Requirements |
|--|------------------------------|
| Annual Progress Reports for Salinity Reduction Goal (Provision VI.C.3.b) | 1 December , annually |

2. Within **60 days** of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by analytical methods shall be reported.

3. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs the raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Sanitary sewer overflows are prohibited by this Order. All violations must be reported as required in Standard Provisions. Facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage facilities.
4. **Annual Operations Report.** By **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:
 - a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.
 - b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
 - c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.
 - d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.
 - e. The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.
5. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to USEPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

An annual report shall be submitted by **28 February** and include at least the following items:

- a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants USEPA has identified under Section 307(a) of the CWA which are known or suspected to be discharged by industrial users.

Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto.

- b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by industrial users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of, the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.
- c. The cumulative number of industrial users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.
- d. An updated list of the Discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent than the federal categorical standards. The Discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:
 - i. complied with baseline monitoring report requirements (where applicable);
 - ii. consistently achieved compliance;
 - iii. inconsistently achieved compliance;
 - iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);

- v. complied with schedule to achieve compliance (include the date final compliance is required);
- vi. did not achieve compliance and not on a compliance schedule; and
- vii. compliance status unknown.

A report describing the compliance status of each industrial user characterized by the descriptions in items iii. through vii. above shall be submitted for each calendar quarter **within 21 days of the end of the quarter**. The report shall identify the specific compliance status of each such industrial user and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report. This quarterly reporting requirement shall commence upon issuance of this Order.

- e. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include:
 - i. the names and addresses of the industrial users subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
 - ii. the conclusions or results from the inspection or sampling of each industrial user.
- f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:
 - i. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.
 - ii. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
 - iii. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
 - iv. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

- v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.
 - vi. Restriction of flow to the POTW.
 - vii. Disconnection from discharge to the POTW.
- g. A description of any significant changes in operating the pretreatment program which differ from the information in the Discharger's approved Pretreatment Program including, but not limited to, changes concerning: the program's administrative structure, local industrial discharge limitations, monitoring program or monitoring frequencies, legal authority or enforcement policy, funding mechanisms, resource requirements, or staffing levels.
- h. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

Duplicate signed copies of these Pretreatment Program reports shall be submitted to the Regional Water Board and the:

State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

and the

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

| | |
|---|--|
| WDID | 5B390107001 |
| Discharger | City of Stockton |
| Name of Facility | Regional Wastewater Control Facility |
| Facility Address | 2500 Navy Drive |
| | Stockton, CA 95206 |
| | San Joaquin County |
| Facility Contact, Title and Phone | Mark Madison, Director, (209) 937-8750 |
| Authorized Person to Sign and Submit Reports | Mark Madison, Director, (209) 937-8750 |
| Mailing Address | SAME |
| Billing Address | SAME |
| Type of Facility | Publicly Owned Treatment Works |
| Major or Minor Facility | Major |
| Threat to Water Quality | 1 |
| Complexity | A |
| Pretreatment Program | Yes |
| Reclamation Requirements | No |
| Facility Permitted Flow | 55 million gallons per day (mgd) |
| Facility Design Flow | 55 mgd |
| Watershed | Sacramento-San Joaquin Delta |
| Receiving Water | San Joaquin River |
| Receiving Water Type | Sacramento-San Joaquin Delta |

- A. The City of Stockton (hereinafter Discharger) is the owner and operator of the City of Stockton Regional Wastewater Control Facility (hereinafter Facility), a publicly owned treatment works (POTW).

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

- B.** The Facility discharges wastewater to the San Joaquin River, a water of the United States, and is currently regulated by Order No. R5-2002-0083, which was adopted on 26 April 2002 and expired on 1 April 2007. Further, Cease and Desist Order No. R5-2002-0084 (CDO) was adopted by the Regional Water Board on 26 April 2002, and establishes a time schedule for the Discharger to comply with ammonia effluent limitations established in Order No. R5-2002-0083. The Orders were petitioned by the Discharger on 28 May 2002 and on 17 October 2002. The State Water Board granted Stay Order WQO 2002-0018 for portions of Order No. R5-2002-0083 and the CDO. On 2 May 2003, the Discharger filed a Motion for Preliminary Injunction/Order Requiring Stay until 5 September 2003, which the Superior Court upheld on 26 June 2003. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements and NPDES permit are adopted pursuant to this Order. However, as a result of the State Water Board Order and the Court Order, the compliance date for the final ammonia effluent limitations were extended to 10 August 2008, and the compliance date for meeting the tertiary treatment requirements was extended to 25 September 2007.
- C.** The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 29 September 2006. Supplemental information was requested on 26 February 2007, and received on 28 February 2007. A site visit was conducted on 21 April 2006 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Stockton, the Port of Stockton, and surrounding urbanized San Joaquin County areas. The Facility serves a population of approximately 326,000, and discharges intermittently up to 55 mgd tertiary-level treated effluent to the San Joaquin River, within the Sacramento-San Joaquin Delta. The Facility average daily flow rate is approximately 31.7 mgd, and the maximum annual average effluent discharge was 36.37 mgd.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility is bifurcated by the San Joaquin River; the main facility (primary and secondary treatment facilities, and sludge processing facilities) is located east of the river and the tertiary treatment facility is located west of the river. At the main facility, the primary treatment processes consist of screening, grit removal, and primary sedimentation. The secondary treatment processes consist of high rate trickling filters and secondary clarifiers. Sludge is removed from the primary and secondary sedimentation processes to gravity thickeners for preliminary water removal, and then pumped to anaerobic digesters. After digestion, the treated sludge is pumped to a sludge lagoon where anaerobic digestion continues. A dredge is used to pump the

concentrated material from the bottom of the lagoon to a belt filter press, and dewatered biosolids are removed by a private contractor off-site for agricultural reuse.

From the main facility, the secondary-treated effluent is piped under the San Joaquin River to the tertiary treatment facility, which consists of unlined facultative oxidation ponds, engineered wetlands, two nitrifying biotowers, dissolved air flotation, mixed-media filters, and chlorination/dechlorination facilities. Several of the facultative ponds are operated in a stand-by mode of operation as necessary, to achieve improved effluent quality by decreasing solids loading on the downstream treatment process, and by maintaining stable ammonia loading to the nitrifying biotowers.

B. Discharge Points and Receiving Waters

1. The Facility is located in T1N, R6E, MDB&M, as shown in Attachment B, a part of this Order.
2. Tertiary-level treated municipal wastewater is discharged at Discharge Point No. 001 to the San Joaquin River, a water of the United States at latitude 37° 56' 15" N and longitude 121° 20' 05" W.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations/discharge specifications contained in the existing Order for discharges from Discharge Point No. 001 and representative monitoring data from the term of the previous Order are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

| Parameter | Units | Effluent Limitation | | | Monitoring Data (From 1 May 2002 – 31 January 2007) | | |
|-----------------------------|----------------------|---------------------|------------------|---------------|--|----------------------------------|-------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Total Coliform ¹ | MPN/100 mL | -- | 2.2 ² | 23 | -- | 50 ² | 130 |
| Total Coliform ³ | MPN/100 mL | 23 ⁴ | -- | 240 | 4 ⁴ | -- | 1600 |
| Turbidity ^{1,6} | NTU | -- | 2 | 10 | -- | 35 | 58 |
| Total Suspended Solids | mg/L | 30 | 45 | 60 | 21 | 30 | 48 |
| | lbs/day ⁶ | 45,300 | 67,900 | 90,600 | 5,016 | 7,134 | 9,782 |
| Settleable Matter | mL/L/hr | 0.1 | -- | 0.5 | 0.055 | -- | 0.2 |
| Oil and Grease | mg/L | 10 | -- | 15 | 9.5 | -- | 14 |
| | lbs/day ⁶ | 4,600 | -- | 6,900 | 2278 | -- | 3234 |
| Ammonia-N | mg/L | 2 | -- | 5 | 28 | -- | 29 |
| | lbs/day ⁶ | 917 | -- | 2,294 | 8,915 | -- | 12,002 |
| Copper ¹ | µg/L | 5.2 | -- | 10.4 | 2.9 | -- | 2.9 |
| | lbs/day ⁶ | 2.4 | -- | 4.8 | 0.74 | -- | 0.74 |
| Copper ³ | µg/L | -- | -- | 35 | -- | -- | 6 |
| | lbs/day | -- | -- | 16 | -- | -- | 2.19 |
| Cyanide ¹ | µg/L | 4 | -- | 9.2 | 8 | -- | 13 |

| Parameter | Units | Effluent Limitation | | | Monitoring Data (From 1 May 2002 – 31 January 2007) | | |
|---------------------------------|----------------------|---------------------|--------------------|--------------------|--|---|-------------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| | lbs/day ⁶ | 1.8 | -- | 4.2 | 1.51 | -- | 1.51 |
| Cyanide ³ | µg/L | -- | -- | 24 | 8 | -- | 8 |
| | lbs/day ⁶ | -- | -- | 11 | 2.26 | -- | 2.26 |
| Chloroform | µg/L | 52 | -- | 129 | 21 | -- | 21 |
| | lbs/day ⁶ | 24 | -- | 59 | 5.09 | -- | 5.09 |
| Dichloromethane | µg/L | 11 | -- | 25 | 0.48 | -- | 0.48 |
| | lbs/day ⁶ | 5 | -- | 11.5 | 0.136 | -- | 0.136 |
| Trichloroethylene | µg/L | 14.5 | -- | 34 | ND | -- | ND |
| | lbs/day ⁶ | 6.7 | -- | 15.6 | ND | -- | ND |
| Bromodichloromethane | µg/L | -- | -- | 82 | -- | -- | 36 |
| | lbs/day ⁶ | -- | -- | 37.6 | -- | -- | 16.5 |
| Dibromochloromethane | µg/L | -- | -- | 23 | -- | -- | 29 |
| | lbs/day ⁶ | -- | -- | 10.6 | -- | -- | 5.59 |
| 1,1-Dichloroethylene | µg/L | -- | -- | 14.5 | -- | -- | ND |
| | lbs/day ⁶ | -- | -- | 6.7 | -- | -- | ND |
| Tetrachloroethylene | µg/L | -- | -- | 14.5 | -- | -- | 0.09 |
| | lbs/day ⁶ | -- | -- | 6.7 | -- | -- | 0.023 |
| Bis (2-ethylhexyl) phthalate | µg/L | -- | -- | 48 | -- | -- | 5.5 |
| | lbs/day ⁶ | -- | -- | 22 | -- | -- | 1.7 |
| Diazinon | µg/L | -- | -- | 0.1 | -- | -- | 0.155 |
| | lbs/day ⁶ | -- | -- | 0.046 | -- | -- | 0.039 |
| DDT ¹ | lbs/year | -- | -- | ND ⁷ | -- | -- | ND |
| DDT ³ | lbs/year | -- | -- | 7.5 ⁸ | -- | -- | ND |
| Endrin Aldehyde ¹ | lbs/year | -- | -- | ND ⁷ | -- | -- | ND |
| Endrin Aldehyde ³ | lbs/year | -- | -- | 12.9 ⁸ | -- | -- | ND |
| Lindane ¹ | lbs/year | -- | -- | ND ⁷ | -- | -- | ND |
| Lindane ³ | lbs/year | -- | -- | 3.2 ⁸ | -- | -- | ND |
| Mercury | lbs/year | -- | -- | 0.92 ⁸ | -- | -- | 0.537 |
| CBOD ^{9,10} | mg/L | 10 | 20 | 25 | 9.78 | 17.17 | 25 |
| | lbs/day ⁶ | 4,590 | 9,170 | 11,500 | 2,655 | 4,753 | 8,173 |
| CBOD ^{9,11} | mg/L | 15 | 23 | 30 | 8.85 | 12.71 | 16 |
| | lbs/day ⁶ | 6,880 | 10,600 | 13,800 | 1,934 | 2,839 | 4,443 |
| CBOD ^{9,12} | mg/L | 20 | 30 | 50 | 18.07 | 22.4 | 30 |
| | lbs/day ⁶ | 9,170 | 13,800 | 22,900 | 5,335 | 7,213 | 9,621 |
| Chlorine Residual | mg/L | -- | 0.01 ¹³ | 0.02 ¹⁴ | -- | 0 | 0 |
| | lbs/day ⁶ | -- | 4.6 ¹³ | -- | -- | 0 | -- |
| Dissolved Oxygen | mg/L | -- | -- | 15 | -- | -- | 1.8 ¹⁶ |
| pH | standard units | -- | -- | 17 | -- | -- | 5.5 – 8.5 ¹⁸ |
| CBOD Removal | % | 85 ¹⁹ | -- | -- | 93.6 ²⁰ | -- | -- |
| TSS Removal | % | 85 ¹⁹ | -- | -- | 92.3 ²⁰ | -- | -- |
| Flow | mgd | -- | -- | 21 | -- | -- | 55 |
| Acute Toxicity | % Survival | -- | -- | 22 | -- | -- | 70 ²³ |

| Parameter | Units | Effluent Limitation | | | Monitoring Data (From 1 May 2002 – 31 January 2007) | | |
|-------------|-------|---------------------|-------------------|------------------|--|---|-------------------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Temperature | °F | -- | -- | 24 | -- | -- | 15.2 ²⁵ |

ND – Not Detected

1 Final limit became effective 1 May 2006.

2 Applied as a 7-day median.

3 Interim limit effective until 1 May 2006.

4 Applied as a monthly median.

5 Turbidity shall not exceed 5 NTU 5% of the time or 10 NTU at any given time monitored continuously.

6 Based upon a permitted flow of 55 mgd.

7 Non-detectable (ND). The Discharger shall use EPA standard analytical techniques that have the lowest practical levels for DDT, endrin aldehyde, and lindane with minimum acceptable reporting levels of 0.01 µg/L, 0.01 µg/L, and 0.02 µg/L, respectively. Detectable concentrations of these pollutants less than cited lowest practical levels shall be considered in compliance with this effluent limitation.

8 Yearly total as calculated per Effluent Limitation B.11 of Order No. R5-2002-083.

9 5-day, 20°C, carbonaceous biochemical oxygen demand, ascertained by 24-hour composite.

10 Effective 1 April through 31 October, and became effective 25 September 2007.

11 Effective 1 November through 30 November.

12 Effective 1 December through 31 March.

13 Applied as a 4-day average effluent limitation.

14 Applied as a 1-hour average effluent limitation.

15 Effective 1 January 2003, the Discharger shall maintain minimum daily average effluent DO concentration of 6.0 mg/L from 1 September through 30 November and 5.0 mg/L throughout the remainder of the year.

16 Minimum daily discharge of the monitoring data.

17 Effective 1 April 2007, the discharge shall not have a pH less than 6.5 nor greater than 8.5. Prior to 1 April 2007, the discharge shall not have a pH less than 6.0 nor greater than 8.5. Individual excursions below or above the prescribed minimum and maximum pH limitations shall not exceed 60 minutes, respectively. The total duration of excursions shall not exceed 1% of the discharge time within the reporting period. The Discharger shall conduct an internal review and report the reasons for any individual excursion exceeding 30 minutes in duration to the Regional Water Board within the self-monitoring report.

18 Range of pH values of the monitoring data.

19 The arithmetic mean of 20°C CBOD (5-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

20 Minimum monthly percent removal of the monitoring data.

21 The average dry weather discharge flow shall not exceed 55 mgd. The peak wet weather discharge flow shall not exceed 67 mgd.

22 Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall not be less than 70% for any one bioassay and 90% median for any three or more consecutive bioassays.

23 Minimum percent survival of the monitoring data.

24 The maximum effluent temperature shall not exceed the natural receiving water temperature by more than 20°F.

25 Maximum difference between the effluent temperature and the natural receiving water temperature.

D. Compliance Summary

| Record of Violations (1 January 2000 – 30 April 2008) | | | | | | | | | | |
|---|------|------|------|------|------|------|------|------|------|--|
| Year: | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | |
| Coliform | 2 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | |
| CBOD ₅ | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | |
| Dibromochloromethane | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | |

E. Planned Changes

[Not Applicable]

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in section II of the Limitations and Discharge Requirements (Findings). This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authority

See Limitations and Discharge Requirements - Findings, Section II.C.

B. California Environmental Quality Act (CEQA)

See Limitations and Discharge Requirements - Findings, Section II.E.

C. State and Federal Regulations, Policies, and Plans

- 1. Water Quality Control Plans.** The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised February 2007), for the Sacramento and San Joaquin River Basins* (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. The beneficial uses of the San Joaquin River downstream of the discharge are municipal and domestic supply; agricultural supply; industrial process supply; industrial service supply; water contact recreation; non-contact water recreation; migration of aquatic organisms; both cold and warm freshwater aquatic habitat; spawning, reproduction, and/or early development; wildlife habitat; and navigation.

The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...*" and with respect to disposal of wastewaters states that "*...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*"

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal regulations, 40 CFR sections 131.2

and 131.10, require that all waters of the state regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected, and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

This Order contains effluent limitations requiring a tertiary level of treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. The Regional Water Board has considered the factors listed in CWC section 13241 in establishing these requirements, as discussed in more detail in the Fact Sheet, Attachment F, Section IV.

2. **Thermal Plan.** The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on 18 May 1972, and amended this plan on 18 September 1975. This plan contains temperature objectives for surface waters, including estuaries. The Thermal Plan specifically includes the Sacramento-San Joaquin Delta within the definition of an estuary. The Discharger discharges tertiary-level treated wastewater effluent to San Joaquin River, within the legal boundary of the Delta as defined by Section 12220 CWC. The Discharger is considered to be an "Existing Discharger of Elevated Temperature Waste" as described in the Thermal Plan. Thus the Thermal Plan requirements for discharges to estuaries are applicable to this discharge. Requirements of this Order implement the Thermal Plan, and are described as follows:

- a. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.
- b. Elevated temperature waste discharge either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.
- c. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.
- d. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

The Discharger has conducted two site-specific temperature studies, a far-field study (November 1995) and a near-field study (May 2006), to assess any possible thermal impacts of the discharge into the San Joaquin River on migrating fish, including possible stress effects on reproduction or early-life fish development. Based on the results of both these studies, this Order does not impose additional temperature

limitations; however, this Order does implement the requirements of the Thermal Plan (see sections IV.C.3.aa and V.A.1.o of this Fact Sheet for further discussion).

3. **Bay-Delta Plan.** The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in May 1995 by the State Water Board superseding the 1991 Bay-Delta Plan. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

The Bay-Delta Plan attempts to create a management plan that is acceptable to the stakeholders while at the same time is protective of beneficial uses of the San Joaquin River. The State Water Board adopted Decision 1641 (D-1641) on 29 December 1999. D-1641 implements flow objectives for the Bay-Delta Estuary, approves a petition to change points of diversion of the Central Valley Project and the State Water Project in the Southern Delta, and approves a petition to change places of use and purposes of use of the Central Valley Project. The water quality objectives of the Bay-Delta Plan are implemented as part of this Order.

4. **Antidegradation Policy.** See Limitations and Discharge Requirements – Findings, Section II.N; and Section IV.D.4 of this Fact Sheet.
5. **Anti-Backsliding Requirements.** See Limitations and Discharge Requirements – Findings, Section II.O; and Section IV.D.3 of this Fact Sheet.
6. **Emergency Planning and Community Right to Know Act.** CWC section 13263.6(a) requires that *"the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective."*

The EPCRA Section 313 toxic chemical release data report indicates that acetaldehyde, ammonia, chlorine, chromium compounds, lead, mercury, MTBE, and zinc compounds discharge into the Discharger's collection system. The Regional Water Board has adopted numeric receiving water objectives for acetaldehyde, ammonia, chlorine, chromium compounds, lead, mercury, MTBE, and zinc compounds in the Water Quality Control Plan for the Central Valley Basin (Basin Plan). A reasonable potential analysis was conducted as specified in Section 1.3 of the SIP with the available data. As detailed in Section IV of this Fact Sheet, available effluent quality data indicate that effluent concentrations of ammonia, and chlorine do have a reasonable potential to cause or contribute to an excursion above numeric water quality objectives within the Basin Plan. Effluent limitations for ammonia, and chlorine are included in this permit pursuant to CWC Section

13263.6(a), and an interim effluent mass limitation for mercury (total) has been established in this Order to maintain the Discharger's current mercury loading to the San Joaquin River.

7. **Stormwater Requirements.** USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the stormwater program and are obligated to comply with the federal regulations. No storm water is directly discharged from the Facility, and therefore, coverage of stormwater discharges from the Facility is not necessary.
8. **Endangered Species Act.** See Limitations and Discharge Requirements – Findings, Section II.P.

D. Impaired Water Bodies on CWA 303(d) List

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "*...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The Delta is divided into multiple WQLSs. The Facility discharges directly into the southern portion and just upstream of the Stockton Deep Water Ship Channel (DWSC). The listing for both WQLSs are applicable to the discharge. The WQLSs are 303(d) listed for: chlorpyrifos; DDT; diazinon; dioxin; electrical conductivity (EC); exotic species; furan compounds; group A pesticides; mercury; pathogens; PCBs; and unknown toxicity.
2. **Total Maximum Daily Loads.** The USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. The DWSC is located directly downstream of the discharge location and is 303(d) listed for dissolved oxygen (DO).

A TMDL for oxygen demanding substances in the DWSC was adopted by the Regional Water Board on 27 January 2005 (Resolution No. R5-2005-0005). The TMDL was approved by the State Water Board on 16 November 2005 and approved by the USEPA on 27 February 2007. The wasteload allocations contained in the TMDL for the Stockton Regional Wastewater Facility are equal to the effluent limitations that were in effect when the TMDL was adopted for oxygen demanding

substances, specifically ammonia, CBOD₅, and DO. Until wasteload allocations are adopted by Regional Water Board, this Order contains effluent limitations requiring a tertiary-level treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. For DO and ammonia, this Order retains the effluent limits from previous Order No. R5-2002-0083 (see section IV.C).

E. Other Plans, Policies and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq.* (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:
 - a. The waste consists primarily of domestic sewage and treated effluent;
 - b. The waste discharge requirements are consistent with water quality objectives; and
 - c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.
2. The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* (see Limitations and Discharge Requirements – Findings, Section II.J). The requirements within this Order are consistent with its policy.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

The Federal CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR, §122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to Federal regulations, 40 CFR §122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that “*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.*” Federal regulations, 40 CFR, §122.44(d)(1)(vi), further provide that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must

establish effluent limits."

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR §122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Regional Water Board's Basin Plan, page IV-17.00, contains an implementation policy ("Policy for Application of Water Quality Objectives") that specifies that the Regional Water Board *"will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives."* This policy complies with 40 CFR §122.44(d)(1). With respect to narrative objectives, the Regional Water Board must establish effluent limitations using one or more of three specified sources, including (1) USEPA's published water quality criteria, (2) a proposed state criterion (*i.e.*, water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e.*, the Regional Water Board's "Policy for Application of Water Quality Objectives") (40 CFR §§122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter. The Basin Plan contains a narrative objective requiring that: *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life"* (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on CWC Section 13260 that requires filing of a report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.
2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions allowed by Federal Standard Provisions I.G. and I.H. in Attachment D of this permit).** As stated in Section I.G of Attachment D, Standard

Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on CWC Section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance.
4. **Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility's systems).** This prohibition is based on CFR Part 122.41 et seq. that requires the proper design and operation of treatment facilities.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Regulations promulgated in section 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

- a. **Carbonaceous Biochemical Oxygen Demand (5-Day @ 20°C) (CBOD₅) and Total Suspended Solids (TSS).** Federal regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for CBOD₅ and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for CBOD₅ and TSS are based on the technical capability of

the tertiary process. BOD₅ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter; the CBOD test is used as a substitute for BOD. The secondary and tertiary treatment standards for CBOD₅ and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily CBOD₅ and TSS loading rates and the corresponding removal rate of the system. In applying CFR 40 Part 133 for weekly and monthly average CBOD₅ and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for CBOD₅ and TSS than the secondary standards currently prescribed; therefore these limitations have been revised to 15 mg/L (weekly average) and 10 mg/L (monthly average), which is technically based on the capability of a tertiary system. In addition to these limits, a daily maximum effluent limitation of 20 mg/L for CBOD₅ and for TSS is included in this Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

Also, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of CBOD₅ and TSS over each calendar month.

- b. **Flow.** The Facility is designed to provide a tertiary level of treatment for up to a design flow of 55 mgd. Therefore, this Order contains an Average Dry Weather Flow effluent limit of 55 mgd.
- c. The final technology-based effluent limitations required by this Order are summarized below in Table F-3

Table F-3. Summary of Technology-based Effluent Limitations

| Parameter | Units | Effluent Limitations | | | | |
|---|-------|----------------------|----------------|-----------------|-----------------------|-----------------------|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum |
| CBOD 5-day @ 20°C | mg/L | 10 | 15 | 20 | | |
| Total Suspended Solids | mg/L | 10 | 15 | 20 | | |
| Flow | mgd | | | 55 ¹ | | |
| 85% Removal of CBOD 5-day @ 20°C and Total Suspended Solids | | | | | | |

¹ Average dry weather flow

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. The process for determining reasonable potential

and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the California Toxics Rule (CTR) and National Toxics Rule (NTR) (see Limitations and Discharge Requirements – Findings, Section II.I).

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

- a. **Receiving Water.** The receiving stream is the San Joaquin River, just upstream of the Stockton Deep Water Ship Channel (DWSC), and a portion of the Delta Waterways. The beneficial uses of the receiving water are described above in Section III.C.1 of this Fact Sheet.
- b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals. The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness, the lower the hardness the lower the water quality criteria. The hardness-dependent metal criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, “floating” effluent limitations that are reflective of actual hardness conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. The SIP does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO_3), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.¹ The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals criteria. Recent studies indicate that using the lowest recorded receiving water hardness for establishing water quality criteria is not always protective of the

¹ See 40 CFR 131.38(c)(4)(i).

receiving water under various mixing conditions (e.g. when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:

$$\text{CTR Criterion} = e^{m[\ln(H)]+b} \quad (\text{Equation 1})$$

Where:

H = Design Hardness

b = metal- and criterion-specific constant

m = metal- and criterion-specific constant

The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e. acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The relationship between the Design Hardness and the resulting criterion in Equation 1 can exhibit either a downward-facing (i.e., concave downward) or an upward-facing (i.e., concave upward) curve depending on the values of the criterion-specific constants. The curve shapes for acute and chronic criteria for the metals are as follows:

Concave Downward: cadmium (chronic), chromium (III), copper, nickel, and zinc

Concave Upward: cadmium (acute), lead, and silver (acute)

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness, use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). Therefore, for cadmium (chronic), chromium (III), copper, nickel, and zinc, the reasonable worst-case ambient hardness can be estimated by using the lowest effluent hardness. The water quality criteria for these metals were calculated for this Order using Equation 1 and a reported minimum effluent hardness of 98 mg/L as CaCO₃, based on 247 samples obtained by the Discharger between 1 May 2002 and 31 January 2007.

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness, water quality objective based on either the effluent hardness or the receiving water hardness alone, would not be protective under all mixing scenarios. Instead, both the hardness of the receiving water and the effluent is required to determine the reasonable worst-case ambient hardness. In this case, using the lowest upstream receiving water hardness in Equation 2, below, is protective if the effluent hardness is ALWAYS higher than

the receiving water hardness. Under circumstances where the effluent hardness is not ALWAYS higher than the receiving water hardness, it may be appropriate to use the highest reported upstream receiving water hardness in Equation 2. The following equation provides fully protective water quality criteria for those metals that exhibit a concave upward relationship.

$$\text{CTR Criterion} = \left[\frac{m}{H_{rw}} \cdot (H_{eff} - H_{rw}) + 1 \right] \cdot e^{m \cdot \ln(H_{rw}) + b} \quad (\text{Equation 2})$$

Where:

H_{eff} = lowest recorded effluent hardness

H_{rw} = lowest recorded receiving water hardness

b = metal- and criterion-specific constant

m = metal- and criterion-specific constant

Therefore, for cadmium (acute), lead, and silver (acute) water quality criteria were calculated using Equation 2 with a lowest reported effluent hardness of 98 mg/L as CaCO_3 and a highest and lowest reported receiving water hardness of 240 and 90 mg/L as CaCO_3 , respectively, based on twelve samples taken between January 2002 and December 2002.

- c. **Assimilative Capacity/Mixing Zone.** Section 1.4.2 of the SIP specifies the requirements for establishing mixing zones and dilution credits. The allowance of mixing zones and dilution credits is discretionary and is determined on a discharge-by-discharge basis.

A dilution credit is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations. Dilution credits may be limited or denied on a pollutant-by-pollutant basis.

Before establishing a mixing zone and dilution credit for a discharge, it must first be determined if, and how much receiving water is available to dilute the discharge. For determining year round mixing zones, the mixing zone and dilution credits must be determined using the parameters specified in Table 3 of Section 1.4.2.1 of the SIP.

The dilution method provided in the SIP assumes a constant diluting flow in the river, which is normal for most discharges. However, because the San Joaquin River is tidal, the flow of dilution water varies with the tidal cycle, resulting in river flow stagnation and very little dilution of effluent. Data provided by USGS Site No. 11304810 provides tidally filtered mean daily discharge data for the San Joaquin River just upstream of the discharge location. Receiving water flow data from 20 August 1995 through 20 September 2007 indicate a minimum tidally filtered daily discharge flow rate of -264 cubic feet per second (cfs) that occurred

on 22 August 2007. Further, a minimum 7-day average tidally filtered daily discharge flow rate of -58.43 cfs was recorded on the date ending 24 August 2007. These negative flow rates indicate low flow conditions in the receiving water and substantial tidal influence, which could result in multiple periods of flow stagnation and little to no dilution. Additionally, tidal action impacts receiving water with multiple doses of the effluent as the river flows downstream past the discharge, reverses moving upstream past the discharge a second time, then again reverses direction and passes the discharge point a third time as it moves down the river.

Evaluation of Available Dilution for Acute and Chronic Aquatic Life Criteria.

During the previous permit renewal for Order No. R5-2002-0083, a "Box Model" by Jones & Stokes was created to attempt to quantify the effect of the multiple doses of effluent to the receiving water. However, due to the impaired condition of the San Joaquin River, the presence of endangered species, and the uncertainty regarding the reliability and accuracy of this "Box Model" study of the discharge and receiving water, the Regional Water Board did not grant dilution credits and mixing zones for the acute and chronic aquatic life criteria. The Discharger has not provided additional information to adequately demonstrate that dilution credits for the acute and chronic aquatic life criteria are appropriate. Therefore, this Order does not allow any dilution credits in the calculations of water quality-based effluent limitations based on acute and chronic aquatic life criteria.

Evaluation of Available Dilution for Priority Pollutant Human Health Criteria.

For human health criteria, critical environmental impacts are expected to occur far downstream from the source such that complete mixing is a valid assumption. With regard to completely mixed discharges the SIP states, *"For completely-mixed discharges...the amount of receiving water available to dilute the effluent shall be determined by calculating the dilution ratio (i.e. the critical receiving water flow divided by the effluent flow)..."* The SIP recommends using the harmonic mean receiving water flow and the long-term arithmetic mean to calculate a dilution credit for human health criteria constituents. The previous permit, Order No. R5-2002-0083, granted a 10:1 dilution credit based on the San Joaquin River flows measured slightly upstream of the discharge during the period from November 1995 through June 2000 (848 cfs), which was the only data at that time, and the permitted design flow of 55 mgd (or 85 cfs). Order No. R5-2002-0083 also provisionally required the Discharger to conduct a human carcinogenic impact study that included at a minimum: 1) a human carcinogenic mixing zone evaluation and 2) an additive human carcinogenicity analysis to evaluate the relative carcinogenic risk of the combined discharge of multiple human carcinogens into the San Joaquin River. Order No. R5-2002-0083 required the human carcinogenic mixing zone evaluation to include, at minimum, a hydraulic analysis of the effluent discharged into the receiving water over a variety of flow conditions to delineate the extent of the corresponding human carcinogen criteria mixing zone.

In compliance, the Discharger submitted the "Evaluation of San Joaquin River Tidal Flow Dilution at the Stockton Regional Wastewater Control Facility" (Jones and Stokes, May 2005), and the human carcinogenic impact study final report, *Stockton Regional Wastewater Control Facility Human Carcinogen Impact Study Phase 2A: Basin Plan Calculation of Additive Toxicity Ratio* (EOA, Inc., 17 May 2006). In these studies, the Discharger tracked tidal movement during various tidal stages, estimated the cumulative tidal flow volume that moved past the discharge, analyzed the long-term average dilution flow, and evaluated the upstream flow at Vernalis combined with the diversions in the Old River to estimate the net flows within the vicinity of the discharges. Based on the findings of this study, there is available dilution for human health criteria.

The San Joaquin River flow data obtained slightly upstream of the discharge during the period from 20 August 1995 through 25 March 2008 was used to calculate the harmonic mean receiving water flow, as recommended in the SIP. The harmonic mean calculation is one over the average of the reciprocals of the running average flow rates; however, the strong tidal influence exerted on the San Joaquin River flows within the area of the discharge complicates this calculation. The calculation is relatively straightforward during the positive San Joaquin River flows, which occurs during the ebb-tide flows; however, the calculation is complex during the negative San Joaquin River flows, which may occur during flood-tide flows or drought years. When negative flow rate values occur, the "running average flow rate" can be positive or negative, and the average of the reciprocals of the running average flow rates can be close to zero. Thus, the harmonic mean calculated value may be artificially high or low (i.e. the harmonic mean of 1.01 and -1.00 is -202, or using the absolute value, the harmonic mean is 1.005). Each tidal period (either ebb-tide or flood-tide) is 6.2 hours, the daily tidal cycle is 24.8 hours, and the full lunar cycle is 28 days; therefore, using a 28-day running average flow rate in the harmonic mean calculation is appropriate to account for negative flows, which equates to an harmonic mean of 647 cfs. Based on the harmonic flow of 647 cfs (November 1995 to 25 March 2008) and a long-term arithmetic mean of 48.6 cfs (1 May 2002 to 31 January 2007), a dilution credit of up to 13.3:1 may be allowed. Based on the findings of the human carcinogenic mixing zone evaluation study and the human carcinogenic impact study, a dilution credit of 13:1 is protective of the MUN beneficial use. Therefore, the proposed Order grants a 13:1 dilution credit applicable to the human health criteria, with a mixing zone that extends approximately 3.5 miles upstream and 1 mile downstream of the discharge (within this section of the San Joaquin River, the downstream is wider than the upstream section). The estimated size of the mixing zone is based on the May 2005 study that estimated the tidal movement up and downstream from the discharge. The 13:1 dilution likely occurs much closer to the point of discharge. There are no known drinking water intakes in the vicinity of the discharge.

Evaluation of Available Dilution for Agricultural Water Quality Objectives.

For constituents where water quality criteria are based on agricultural water quality objectives, critical environmental impacts are expected to occur far downstream from the source such that complete mixing is a valid assumption.

Regarding the application of a mixing zone, the TSD states that, " *...the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. . .*". As previously stated, there are no known drinking water intakes in the vicinity of the discharge, but there is one agricultural water intake located near the discharge, which is used for flood irrigation in the spring time (depending on crop rotations). However, because protection of agricultural beneficial uses is based upon the long-term effects, for purposes of establishing WQBELs in this Order, dilution credits may be granted based on the San Joaquin River harmonic flow and a long-term arithmetic mean discharge (See Evaluation of Available Dilution for Priority Pollutant Human Health Criteria). Therefore, this Order grants a 13:1 dilution credit applicable to those constituents where water quality criteria are based on agricultural water quality objectives.

In granting a mixing zone, the SIP states that a mixing zone shall be as small as practicable, and meet the conditions provided in Section 1.4.2.2 as follows:

"A: A mixing zone shall not:

- (1) compromise the integrity of the entire water body;*
- (2) cause acutely toxic conditions to aquatic life passing through the mixing zone;*
- (3) restrict the passage of aquatic life;*
- (4) adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;*
- (5) produce undesirable or nuisance aquatic life;*
- (6) result in floating debris, oil, or scum;*
- (7) produce objectionable color, odor, taste, or turbidity;*
- (8) cause objectionable bottom deposits;*
- (9) cause nuisance;*
- (10) dominate the receiving water body or overlap a mixing zone from different outfalls; or*
- (11) be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."*

This Order only allows a mixing zone for human health and agricultural criteria (i.e. long-term criteria). This Order does not allow mixing zones for compliance with aquatic toxicity criteria. The mixing zone is as small as practicable, will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the waterbody or overlap existing mixing zones from different outfalls. No drinking water intakes are located within the mixing zone and the mixing zone does not overlap a mixing zone from a different outfall.

The discharge will not cause acutely toxic conditions to aquatic life passing through the mixing zone, because this Order does not allow an acute mixing zone and requires compliance with an acute toxicity effluent limitation and